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How to Share Geospatial Data Primer

GeoConnections

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Ce document est disponible en français sous le titre: Guide d'introduction sur la façon de partager des données géospatiales.

For more information about the GeoConnections program and the Canadian Geospatial Data Infrastructure (CGDI) or for additional copies of this document, contact:

GeoConnections
615 Booth Street
Ottawa, Ontario K1A 0E9
e-mail: info@geoconnections.nrcan.gc.ca
tel.: 1-877-221-6213
fax: 613-947-2410

Also available on the Internet at GeoConnections.NRCan.gc.ca

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1. Introduction

This primer is intended to inform those who produce or use geospatial data about the realities and challenges of geospatial data sharing. This primer discusses possible data sharing models, and refers to a number of example agreements.

This primer provides information on geospatial data sharing, including related legal topics, current at the time of publication, for general informational purposes only. Material found in this primer may not apply to all jurisdictions.

This primer is one in a series of operational policy documents made available by GeoConnections. GeoConnections is not responsible for the use of any materials or contents of this primer. The contents of this primer do not constitute legal advice and should not be relied upon as such.

1.1 Purpose of this Primer

While access to geospatial data is increasing, as is the general recognition by the geospatial community of the societal and economic benefits of sharing geospatial data, there has been and continues to be a need for guidance on effective and efficient data sharing practices.

GeoConnections has supported the development of numerous guidance instruments meant to educate data contributors, owners, custodians and users on the issues associated with protecting, using and sharing geospatial data, with a focus on supporting related services, programs, applications and businesses. Such tools include The Best Practices for Sharing Sensitive Environmental Geospatial Data, and the Developers' Guide to the CGDI: Developing and Publishing Geographic Information, Data and Associated Services. In 2008, GeoConnections also published the Dissemination of Government Geographic Data in Canada: Guide to Best Practices, intended for use by federal producers of government geographic data.

More recently, various user need assessments conducted by GeoConnections identified several data sharing issues of concern to the geospatial data community (excluding federal producers of government geographic data), including the need for guidance on appropriate models for the sharing of geospatial data. To respond

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GeoConnections and the CGDI

*The **GeoConnections** program is a national initiative led by Natural Resources Canada that supports the integration and use of the **Canadian Geospatial Data Infrastructure (CGDI)**. The CGDI is an on-line resource that helps improve the sharing, access and use of Canadian geospatial information (i.e., in formation tied to geographic locations in Canada). It helps decision makers from all levels of government, the private sector, non-government organizations and academia make better decisions on social, economic and environmental priorities.*

GeoConnections is a strong advocate for open geospatial data sharing, in the belief that such data sharing is in the best interests of the organizations and citizens of Canada. GeoConnections encourages geospatial data providers to work to change any existing policies that inhibit geospatial data sharing.

GeoConnections produced this primer to show examples of different types of data sharing arrangements and direction on their use, with the objective of facilitating data sharing partnerships between CGDI stakeholders.

to these needs, GeoConnections contracted Hickling Arthurs Low to conduct research in support of the development of a guidance document aimed at non-federal producers[1] of geospatial data interested in developing their own geospatial data sharing policies and procedures.

The purpose of this Primer is therefore to promote, encourage and provide information on different types of geospatial data-sharing models to non-federal producers of geospatial data interested in developing their own geospatial data sharing policies and procedures. It is the results of the research conducted by Hickling Arthurs Low, and intended to provide the reader with sufficient insights and reference to resources in order to assist them in implementing a consistent approach within their organization for the sharing of geospatial data.

This primer has been developed within a context established by key principles of data sharing, gained from the examination of good practices in Canada and internationally, which are discussed in the next section.

1.2   What is Data Sharing?

Geospatial data sharing is the transfer of location-based information between two or more organizations. Data sharing can take many forms, from sharing metadata (information about data), to sharing individual data layers, to sharing complete databases. When an organization shares metadata, this exposes the existence and availability of that data and is a key first step in sharing any type of data.   Data sharing can be from one party to another, between two parties, involve multiple parties, or simply be a release of data openly to the public to allow unlimited access and use.

Today's general trend towards increased data sharing is motivated by many factors, such as:

- improved technologies and mechanisms for data discovery and sharing (such as the   GeoConnections Discovery Portal);

- better data quality as a result, for example, of increased use of GPS, high resolution satellite imagery and airborne imagery etc., leading to better opportunities for data integration from multiple sources;

> ### Open Data
>
> *Open Data is a worldwide trend in making data freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control.*
>
> *In Canada, governments at the federal, provincial and especially municipal levels are embracing the open data concept, often with substantial geospatial data offerings being included, as evidenced by the following examples:*
>
> **Government of Canada Open Data Portal**
> *(http://www.data.gc.ca)*
>
> **DataBC**
> *(http://www.data.gov.bc.ca)*
>
> **City of Edmonton Open Data Catalogue**
> *(http://data.edmonton.ca/)*
>
> **Mississauga Data**
> *(http://www.mississauga.ca/data)*
>
> **Nanaimo Data Catalogue**
> *(http://data.nanaimo.ca/)*
>
> **Open Data Ottawa**
> *(http://ottawa.ca/opendata)*

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[1] Note that federal producers of geospatial information are obliged to comply with federally-mandated policies and directives, such as the forthcoming Open Government Directive.

- continuing pressures on organizational budgets, resulting in increased openness to use of other organizations' data;

- increased emphasis on horizontal initiatives within government, requiring multi-party information integration and use.

- the open data movement, in which common themes are: interoperability and integration of data sets; removing restrictions on terms of use and dissemination; disseminating works at minimal or no cost; and improving public access to data and information in the public interest.

To help facilitate your organization's data sharing efforts, you will be introduced to a number of example data sharing arrangements. Use case scenarios are illustrated to help individuals and organizations make decisions about their own data sharing policies and practices. A decision tree provides guidance on the purposes and conditions of use for different types of agreements, and typical use scenarios for each.

Data providers that develop geospatial data holdings in cooperation with other providers will find this primer to be particularly useful. However, this primer will be relevant for any organization that is interested in sharing data with others. Please note that this primer is not intended to endorse a specific model agreement for use, but rather seeks to promote good principles and best practices in data sharing.

Individuals and organizations who share data or make data available for use are strongly encouraged to consult with their legal counsel when developing or entering into any data sharing agreement.

1.3   Legal Impediments to Data Sharing

It is important to be aware that there may be legal impediments to data sharing in any jurisdiction. While some of these barriers reflect deliberate policy choices to favour certain interests (e.g., personal privacy) over openness, others may involve the unintended consequences of unrelated government policies (e.g., government branding policies making use of Official Marks).

Most legal barriers that impede data sharing are contextual. When making decisions on sharing data, one should consider the type of data to be released and the implications of public dissemination. Different types of data raise different policy issues and hence face different legislative barriers. In particular, give careful thought to whether data to be shared falls into any of the following categories:

- **Third-party data:** Where an organization receives, integrates or redistributes data from a third party data provider, it must ensure that it has the right to share that data, and that it does so in compliance with any terms and conditions of use set out by the third party provider.

- **Data containing personal information:** Federal and provincial privacy acts prohibit the government's use of personal information for purposes other than those for which the information was collected. In addition, federal and provincial privacy acts prohibit the dissemination of personal information without the consent of the affected individuals. In some cases, the level of detail disclosed may affect whether an individual can be identified. Even anonymized data can become de-anonymized, and therefore personal, when combined with other datasets. For example, in 2006 the identity of an anonymous AOL subscriber was revealed through cross referencing her identity number with a database of her search patterns (Barbaro and Zeller, 2006).

> **Data Sharing Policy Challenge: Sharing Sensitive Data with Impunity** (GeoConnections and AMEC, 2010)
>
> **Solutions:**
> - Use agreement and license instruments
> - Create a new data product that has the sensitive aspects removed or altered
> - Assess the requestor's need-to-know and capacity to safeguard the data
> - Employ metadata that defines safeguards to be applied to the data
> - Train data owners and users to ensure data is appropriately handled and a trusted relationship is ensured

- **Unilingual textual data:** In most cases, where geospatial datasets contain text, the federal government must make the text available in both official languages as prescribed by the *Official Languages Act*, R.S.C. 1985, c. 31 (4th Supp), s. 22. However, with a few exceptions, the same does not generally apply to provincial datasets.

- **State secrets:** Where data could prejudice the safety of Canada, the *Security of Information Act* will, in some cases, prohibit disclosure (e.g., the nature or content of plans for military operations or information about covert operations, which can include geospatial data). Likewise, provincial legislation such as the Ontario *Freedom of Information and Protection of Privacy Act* prohibits sharing of information that could prejudice the defence of Canada. Any data from a remote sensing system (i.e., satellite imagery) also carries specific restrictions pursuant to the *Remote Sensing Systems Space Act.*

Whether or not datasets fit within these key categories, any organization should ensure compliance with any legislation that may apply to a specific type of data.

2.   Guiding Principles for Data Sharing

This primer has been developed to promote full and open sharing of geospatial data, within a context established by important principles of data sharing. These principles have been identified from the examination of good practices in Canada and internationally (The National Archives (UK), 2011), (GEO, 2009), (ANZLIC, 2003), (CCME, 2002), and are explained in the following sections. Applications of these principles in different use scenarios are highlighted in Section 3.

2.1   Simplicity

Data sharing arrangements should be simple to understand and designed to minimize compliance costs. Agreements that make extensive use of legal terminology are difficult for lay people to understand. Potential users may feel unqualified to assess the implications of clauses and the potential risks of entering into the agreement. Alternatively, users may decide that they need to seek legal advice, which adds to the cost of concluding data sharing arrangements and can slow down the process. The application of simple language and consistent approaches could contribute to simplification of data sharing arrangements.

Data Sharing Policy Challenge: Getting Data Sharing Initiatives off the Ground (National Geospatial Advisory Committee, 2011)

Solutions:

- Set up pilot programs or experiments designed to break down barriers, and then prototype
- Create small communities of interest for a prototype or pilot, and then match users one at a time based on a common issue or interest
- Employ a transitional build – use a "build a little, test a little, and learn a lot" approach
- Identify and acknowledge legal or other constraints on data creators and providers
- Ensure the most current and accurate data are available, and identify data stewards
- Develop an outreach and communication strategy to potential user communities
- Provide use cases to help potential partners understand the concept and benefits
- Develop the community of sharing by communicating the power of data sharing

2.2   Non-exclusivity

Generally speaking, access to data should be provided to as wide a range of users as possible. Data sharing arrangements should be structured so as not to exclude any parties due to their lack of detailed knowledge of the geospatial domain, lack of familiarity with the data and associated technology, or inability to pay.

2.3   Fairness

Data sharing should be undertaken on terms that are fair to all parties. The terms in agreements should recognize the

benefits of the sharing arrangement to both the provider and user of the information, including the benefits to third parties, if the data provider is redistributing data provided by those parties.

2.4 Non-discrimination

Terms should be extended fairly to all parties for similar uses of the data. Data providers need to be consistent in their data sharing arrangements so that, for comparable data uses, some users do not receive benefits that are not available to other users.

2.5 Acknowledgment and attribution

Users of the shared data should acknowledge and attribute the source(s) of the data that they further disseminate or integrate within their products. When redistributing shared data or products derived from shared data, recipients should clearly cite all sources of data. This is best achieved by documenting source data in the metadata. CGDI endorsed metadata standards have fields to accommodate acknowledgement of the source of data. Such transparency is particularly critical if the recipient of the shared data is charging for the derived data products, in which case prospective buyers are in a better position to judge the appropriateness of the product fees. Acknowledgment of source is a condition of use in nearly any data sharing agreement.

> **Data Sharing Policy Challenge: Keeping Data Sharing Agreements Going** (Austalian National Statistical Service, 2009)
>
> **Solutions:**
>
> - Focus on desired outcomes
> - Ensure ongoing regular communication
> - Develop a clear understanding of roles and responsibilities, which is critical for building strong relationships
> - Demonstrate flexibility – it may not be possible to agree on all of the details in advance
> - Allow enough time to negotiate and develop a data sharing arrangement
> - Identify a champion within each agency to support the arrangement
> - Develop support of the arrangement at all levels within each agency, including executive, technical and operational levels
> - Achieve a common understanding of the aims, purpose and context of the data sharing arrangement, through a data sharing agreement

2.6 Transparency

Information about data sharing arrangements and standard licence terms should be shared with stakeholders and, to the extent possible, made available to the public. Organizations should demonstrate that they are committed to the full and open exchange of geospatial data by being proactive in communicating their data sharing policies and making the terms of data sharing as accessible to as many potential users as possible.

2.7 Promptness

Users should be provided with access to the shared data in the shortest time possible. This means that agreements and licences should be negotiated and issued promptly and efficiently in order to minimize delays. Use of simplified, standard terms will facilitate the process. Data access should not be delayed more than is absolutely necessary to exercise effective quality control.

3.   Approaches to Data Sharing

3.1   Data Sharing Arrangements

When an owner of a right in intellectual property (i.e., copyright in a dataset) allows another to do the acts that the "other" would otherwise be prohibited from doing were it not for that permission, such as copying the datasets, further distributing it, etc., then that, in law, is a licence. Where, for example, a non-for-profit organization "shares" its database with another non-for-profit organization, or with multiple organizations, the first has, in law, granted a licence to the use of its database. Similarly, where a municipality "shares" its datasets with a public utilities authority, the municipality has, in law, granted a licence to the use of its datasets. Likewise, where a university, a provincial government agency, a municipal government agency and a multi-national pharmaceutical company all "share" or "exchange" their datasets, they are, in law, granting to each other licences.

Academia, governments, non-governmental organizations, private sector entities, public and quasi-public sector entities and individuals routinely collaborate on matters of mutual interest. Such collaborations may entail two or more entities working together on a common project, sharing datasets and collaboratively developing new products, services or programs.

Such arrangements are typically described in written agreements which, depending on the intention of the parties, will be non-legally binding or legally binding.

Non-Legally Binding Agreements (Non-contractual). Non-legally binding agreements are often referred to as "handshake agreements", "Memoranda of Understanding ("MOU")" or "Memoranda of Agreement" ("MOA"). For the sake of simplicity, the latter term (MOA) is used in this Primer.

An "MOA" refers to an agreement that is not intended to create legal obligations, and is not intended to be legally enforceable. An MOA will describe the general parameters of a particular endeavour. However:

- it is not a detailed working document;
- it does not set out the obligations of the parties;
- it does not provide authority to enter into legally binding agreements;
- it does not create binding legal obligations.

MOAs are not to be used where there are restrictions attaching to the use of a licensed datasets which the parties would want to enforce; nor are they to be used when the use of the licensed datasets are subject to the payment of fees.

MOAs are the preferred instrument used to evidence arrangements between federal departments and agencies to exchange information.

Legally-Binding Agreements (Contractual). By contrast, a licence agreement is a contract creating legally-binding obligations enforceable before a court of law. A licence agreement will describe in detail the obligations of the parties, and will indicate, namely, whether:

- there are any restrictions on the use of the licensed datasets;

- there are attribution requirements;

- the use of the licensed datasets is on a fee basis;

- there are any reporting requirements.

A licence agreement may be as restrictive or as permissive as the owner of the datasets wishes. Key characteristics of commonly-found licence agreements used for the licensing of geospatial data are found in Table 1 below:

Table 1: Types of Licensing Agreements

Agreement Type	Dissemination Objective	Restrictions on Use of the Data	Positive / Negative Aspects
No-Cost Unrestricted Use Licence Agreement	Promote the widest use of the data, at no cost to the user	No restrictions	POSITIVE : Ease of administration; strong public support NEGATIVE : Reduced control over the use of the data
Fee Based Unrestricted Use Licence Agreement	Promote the widest use of the data, on a fee basis.	No restrictions	POSITIVE : Ease of administration; strong public support; predictable impact on cost-recovery NEGATIVE : Reduced control over the use of the data
No-Cost End –Use Restricted Licence Agreement	Promote use of the data, at no cost to the user, while retaining control on the number and/or type of users	No redistribution of the data Rights to the data restricted to the licensee's own internal use	POSITIVE: Effective control of number/types of users NEGATIVE: Potential inhibitor of wider use of data
Fee-Based End-Use Restricted Licence Agreement	Promote use of data while retaining control on the number and/or type of users, on a fee basis	No redistribution of the data Rights to the data restricted to the licensee's own internal use	POSITIVE: Effective control of number/types of users; predictable impact on cost recovery NEGATIVE: Administrative overhead; Potential inhibitor of wider use of data

The determination of whether a particular data sharing arrangement should be evidenced by a MOA or a licence agreement is therefore a function of the desired enforceability of the instrument. Do the parties intend to create legally enforceable obligations? If so, their relationship ought to be captured in a licence agreement.

3.2   Overview of Example Agreements

This section describes the following three example agreements:

1. **Data Sharing Agreement** – defined as a general document used to cover the sharing of data between organizations where there is no exchange of funds, which clearly state the terms and conditions of use for the data (sometimes called Memorandum of Agreement or Understanding, or Letter of Agreement or Understanding).[2]

2. **Licensing Agreement** – defined as a contract under which the owner of data allows a licensee to use, modify, distribute or sell copies of the original, which usually limits the scope or field of the licensee, and specifies whether the licence is exclusive or non-exclusive and whether the licensee will pay royalties or some other consideration in exchange.

3. **Service Level Agreement** – defined as a contract between a service provider and a customer that establishes a common understanding about services, priorities, responsibilities, guarantees and warranties, and details the nature, quality, and scope of the service to be provided, usually in measurable terms. For the purposes of this primer, service level agreements are normally associated with the provision of access to data through web services.

The decision tree shown in Figure 1 illustrates the different types of agreements and can be used to identify the most appropriate approach for particular circumstances.

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[2] The research demonstrates that the terms "Data Sharing Agreement", "Memorandum of Understanding", "Memorandum of Agreement", Letter of Understanding" and "Letter of Agreement" are often used interchangeably. While the formats may vary (e.g., letters tend to be shorter and use less formal, legalistic language), the intentions are common – to establish a written understanding of the terms under which data are to be shared between the signatories, where licensing of data use is not a concern.

Figure 1: Finding the Right Type of Agreement
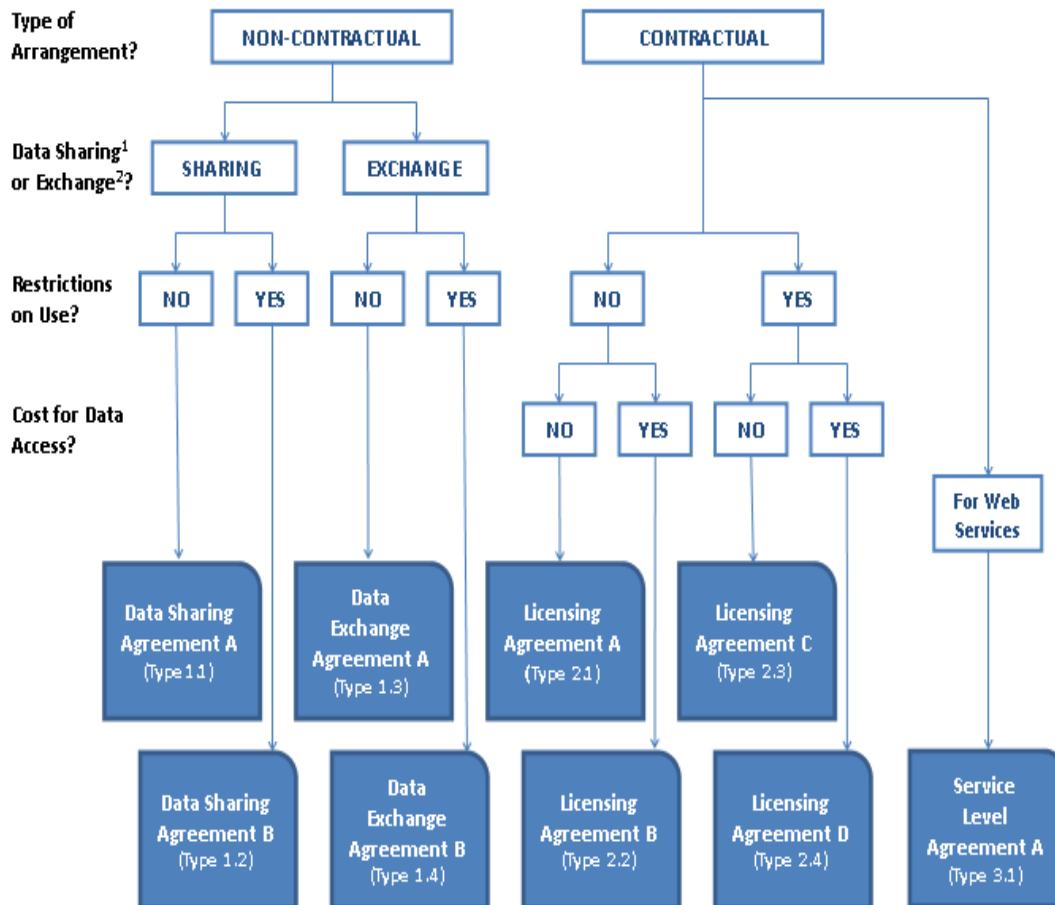
[1] Data sharing – transfer of data from a provider to a user
[2] Data exchange – transfer of data between two or more data providers

Table 2 provides a summary of the different types of data sharing arrangements, their respective purposes and typical data use conditions.

Table 2: Types of Data Sharing Agreements

Type	Name	Purpose	Conditions
Data Sharing Agreements			
1.1	Data Sharing Agreement A: No Restrictions	For sharing of data between provider and user, where there are no restrictions on the use of the data	No conditions attached to the use of the data
1.2	Data Sharing Agreement B: With Restrictions	For sharing of data between provider and user, where some restrictions on the use of the data apply	Typical conditions: • Intended use(s) stated • Disallowed use(s) stated
1.3	Data Exchange Agreement A: No Restrictions	For exchange of data between two or more providers, where there are no restrictions on the use of the data	No conditions attached to the use of the data
1.4	Data Exchange Agreement B: With Restrictions	For exchange of data between two or more providers, where some restrictions on the use of the data apply	Typical conditions: • Intended use(s) stated • Disallowed use(s) stated
Licensing Agreements			
2.1	Licensing Agreement A: No-cost Data Access with No Restrictions	For sharing of data under licensing terms, where there are no restrictions on the use of the data and no fees are to be paid to the licensor	No conditions attached to the use of the data
2.2	Licensing Agreement B: Fee-Based Data Access with No Restrictions	For sharing of data under licensing terms, where there are no restrictions on the use of the data and fees are to be paid to the licensor	No conditions attached to the use of the data
2.3	Licensing Agreement C: No-cost Data Access with Restrictions	For sharing of data under licensing terms, where some restrictions on the use of the data apply and no fees are to be paid to the licensor	Typical conditions: • Intended use(s) stated • Disallowed use(s) stated
2.4	Licensing Agreement D: Fee-Based Data Access with Restrictions	For sharing of data under licensing terms, where some restrictions on the use of the data apply and fees are to be paid to the licensor	Typical conditions: • Intended use(s) stated • Disallowed use(s) stated
Service Level Agreement			
3.1	Service Level Agreement A: Data Access through Web Services	For establishing guarantees of service for online data access	N/A

3.3 Typical Use Scenarios

The following examples illustrate typical use scenarios. It is noteworthy that **all of these data sharing arrangements include a requirement to acknowledge the data source(s)** when copying, modifying, publishing, distributing or transmitting the data; a widely used practice in data sharing arrangements of all types.

3.3.1 Data Sharing

There are two types of non-binding data sharing agreements. The *Data Sharing Agreement A: No Restrictions* is intended for use by geospatial data producers that wish to see the widest possible use of their data, with no conditions being placed on the use or redistribution of that data. Data producers that use this type of data sharing arrangement typically are not interested in recovering any costs of data creation and maintenance and believe that the open use of their data is in the public good. The *Data Sharing Agreement B: With Restrictions* model is designed to provide a simple and easy way of data sharing for producers that want to place some restriction on the use of their data. Such restrictions are typically minimal, and may include such clauses as prohibition of the disassembly of the data, or a requirement for the user to notify the producer of plans to redistribute the data.

Data Sharing Policy Challenge: Finding an Acceptable "Win" for Each Party to an Agreement (GeoBase Case Study)

Solutions:

- Encourage all parties to take the long term view and focus on the overall objectives, rather than the short term commitments by and outcomes for each party

- Be prepared to take some short term risks (i.e., no immediate benefits) in order to achieve the long term gains for all parties

- Consider and acknowledge what each party has to contribute aside from financial resources (e.g., expertise, experience with data sharing, track record of delivering on commitments, good quality data, etc.)

3.2.1.1 Data Sharing: Scenario 1

Government Mapping Agency X has decided to make its geospatial data freely available to all user organizations across its entire government structure, but wishes to formalize this data sharing arrangement with a written agreement. Agency X is not concerned about how this data is used and wants to encourage its integration with other datasets and the broadest possible use for government operations and policy setting. They feel that such use will provide evidence of the value of their data, which will raise their profile and help to ensure continued support for their program, and feel that there is minimal risk in allowing this open, unrestricted use of their data. *Data Sharing Agreement A* is the right type of data sharing arrangement for them.

3.2.1.2 Data Sharing: Scenario 2

Outdoor Canada is a not-for-profit recreational association whose members are adventure travel enthusiasts. They have developed digital map products that are widely used in mobile devices by their members seeking good map data for geographic locations that offer thrilling outdoor activities such as mountain climbing and white water canoeing. They are pleased to be able to integrate Government Mapping Agency X's geospatial data into their

digital data products under *Data Sharing Agreement B*, having requested and received permission for this use. Agency X is pleased to make their data accessible under this more informal data sharing arrangement, and although they do not wish to license the data to Outdoor Canada, they do require a formal agreement to ensure that the released data is used only for this purpose.

3.3.2   Data Exchange

The *Data Exchange Agreement A: No Restrictions* and *Data Exchange Agreement B: With Restrictions* differ from the Data Sharing Agreements discussed above only in that they involve the two-way sharing of data. The arrangements that these models are intended to cover are typically partnerships or cooperatives of data producing organizations that see the benefits of collaborating on the creation and maintenance of shared geospatial data. The second model is typically employed in cases where the shared data may be accessible to other parties under different arrangements, often involving fees.

3.2.2.1   Data Exchange: Scenario 1

A federal government environment agency and their provincial/territorial counterparts have reached an agreement to develop a shared geospatial dataset called CanadaEnviroMap. This dataset is intended for internal use for environmental reporting and as a framework for the mutual exchange of other types of environmental information (e.g., land and ice cover changes, weather, etc.). The organizations have a long history of working together cooperatively and do not require a more formal data sharing arrangement, so *Data Exchange Agreement A* is suitable for this partnership. They also agree to the addition to the data exchange arrangement of other environmental organizations at the local government level, should interest be expressed in the future.

CASE STUDY: GAINING TRUST

The Integrated Cadastral Information Society (ICIS) is a non-profit organization formed to exchange province-wide spatial data in British Columbia (ICIS Case Study). ICIS has four member classes:

- **Charter –** provincial and municipal government and utilities
- **First Nations –** 1st Nations Governments within the province of BC
- **Regular –** non-Charter utilities
- **Associate –** federal government, mining, surveying, etc.

Cadastral and utility infrastructure data is shared and exchanged through ICIS, and is licensed to ICIS via a *Data Sharing License Agreement*. Since ICIS is a data aggregator, it does not make changes to contributed content, but can license use of the aggregated data to third parties.

ICIS helped to develop trust within its membership by facilitating two-way interaction between members through regular participation in industry forums, and organization of workshops and business planning sessions. In addition, initial member fears about potential data misuse and liability had to be addressed and ICIS dealt with this by:

- creating consensus about the business purpose for data sharing, and
- developing rigorous data sharing and licensing agreement terms disclaiming all warranties, conditions, representations, indemnities and guarantees with respect to the data

3.2.2.2 Data Exchange: Scenario 2

Several provincial and municipal government agencies and private utility companies have decided to form a data exchange cooperative to pool their utility mapping data. This new data exchange arrangement will facilitate access to each other's data, which is a normal operational requirement for maintenance of existing and planning of new utilities infrastructure. They are all comfortable with a non-binding form of agreement, but agree this pool of data may have value beyond their cooperative that they may need to consider in the future. Adding a restrictive clause to *Data Exchange Agreement B* provides them with the assurance that no party to the agreement will independently pursue the exploitation of the commercial potential of this shared dataset without first seeking agreement from all the other parties.

CASE STUDY: SHARING ROAD NETWORK DATA

A federal-provincial-territorial initiative was formed to create and maintain a shared framework data product called GeoBase (GeoBase Case Study). This data sharing arrangement is overseen by the Canadian Council on Geomatics (CCOG). The Technical Support team for GeoBase, which manages the database and the GeoBase Portal, is located within the Mapping Information Branch, Earth Sciences Sector of Natural Resources Canada.

The GeoBase Steering Committee adopted a number of GeoBase Principles to guide the development of GeoBase, including the following principles that relate to data sharing:

- Source, regional and, where practical, national data all share the same geometry
- Source data is collected once and used by many
- Source data is collected and maintained closest to source
- GeoBase data uses a common license

The parties created the *Agreement for the Exchange and Unrestricted Use of Data*, a template that was developed to cover the exchange of framework data layers between each of the provincial/territorial geomatics agencies and Natural Resources Canada, and with other organizations that can contribute useful data to the GeoBase Program.

Based on this template, the *Agreement for the Maintenance of the Prince Edward Island Portion of the National Road Network (NRN)* was created. This agreement, between Natural Resources Canada (NRCan), Statistics Canada (STC), Elections Canada (EC) and the Prince Edward Island Department of Transportation and Public Works (PEI), covers a situation where data is being contributed to GeoBase by a province in exchange for funding provided by GeoConnections. It outlines in detail the responsibilities of each of the parties and the funding to be provided by NRCan and STC to PEI and specifies retention by each of the parties of its background intellectual property.

3.2.2.3   Data Exchange: Scenario 3

Government mapping agencies M and N have reached an understanding on the mutual exchange of road network data, to keep their respective road data layers as current as possible by sharing the maintenance cost and work. However, since this is a new working arrangement, they have agreed on a few restrictions to the use of their respective data (i.e., permitted uses are specified in the agreement, and issue by one party of a license for use of the data by a third party is not permitted without the other party's consent). The two agencies have decided that *Data Exchange Agreement B* meets their needs for this data exchange arrangement.

3.2.2.4   Data Exchange: Scenario 4

A major toxic chemical spill has occurred due to a derailment incident near Pleasantville, producing significant threats to human life and health from the drifting smoke from an out of control fire and leakage of the chemical into Narrow River. The response to this situation will require a range of agencies (e.g., town public works department, fire, police, ambulance and provincial and federal environmental authorities) to work together over an extended period of time. At a meeting between these agencies early in the response and recovery cycle, the agencies quickly agree that integration of a variety of geospatial datasets will be necessary to help plan the response efforts and track consequences of the spill over time. Since the use of the shared data will be targeted and the partners have established working relationships, they agree to use the *Data Exchange Agreement A: No Restrictions* to create a data sharing arrangement for existing data and new data that will be collected and shared during the extended recovery timeframe.

Data Sharing Policy Challenge: Keeping Data Sharing Agreement Negotiations Moving (GeoBase Case Study)

Solutions:

- Focus the agreement and its terms on the data and the mutual objectives regarding the data, rather than the financial terms of the sharing or exchange arrangements, which can be handled separately.

- Keep legal terminology to a minimum, but provide enough time in the negotiation timetable to allow input from legal counsel for all parties while at the same time apply consistent pressure on these experts to provide timely input.

- Minimize the number of agreement drafts by focusing on the wording that all parties can live with, rather than debating the differing opinions on specific terminology.

Data Sharing Policy Challenge: Making Data Exchange Cooperatives Work (ICIS Case Study)

Solutions:

- Recognize the value of data contributions from partners with limited financial resources by providing them with no-fees membership
- Enhance the quality of the data in the cooperative by providing small grants to bring data to a common standard and passing on errors detected and reported by users to the appropriate data custodian
- Make it easy for partners to contribute data by allowing organizations to contribute their digital data in its native format and data model, preferably by automating the process

3.3.3   Data Licensing

There are four types of data licensing agreements designed for circumstances where it is appropriate to establish a formal, legally binding contract governing the use of data. The first two licensing models are intended for use in situations where no restrictions will be placed on the use of the data. *Licensing Agreement A: No-cost Data Access with No Restrictions* is based upon the United Kingdom *Open Government License for Public Sector Information* (The National Archives (UK), 2011), which the Government of Canada is considering adapting for use. The Government of British Columbia is already using the UK model as the basis for the *Open Government License for Government of BC Information* (DataBC, 2011). This model will be of interest to data producers that wish to formally license the use of their data in as open and flexible a means possible, where there is no interest in collecting fees for such use. Licenses such as this one, in the form of a web wrap license, are used by Open Data web portals and do not require explicit acceptance by the data user to be in force; rather, any use of the data construes acceptance of the license. *Licensing Agreement B: Fee-Based Data Access with No Restrictions* serves a similar purpose, but is appropriate for cases where the data producer has decided to charge a licensing fee for the use of their data. In this case, a web wrap license is not appropriate; something more formal, such as signed agreement, is required to enforce the agreement.

The remaining two licensing models cover circumstances where the data producer wants to place restrictions on the use of their data, such as those discussed in Section 3.2.1. Similar to the first two licensing models, the distinction between *Licensing Agreement C: No-cost Data Access with Restrictions* and *Licensing Agreement D: Fee-Based Data Access with Restrictions* is the requirement to establish the basis for collection of fees in the latter case.

CASE STUDY: TRADITIONAL KNOWLEDGE

The First Nations Technology Council (FNTC) is a not-for-profit corporation located in British Columbia. FNTC developed the First Nations in BC Portal to increase collaboration, open communication and the sharing of experiences, tools and resources, including key documents such as policies, plans and sample agreements created by First Nations communities and organizations (FNTC Case Study).

Included in the Tools section of the Portal are a number of templates dealing with data sharing (e.g., *Traditional Knowledge Data Agreement* and *Digital Data License Agreement)*.

First Nations in BC have had to address uncertainty of intellectual property rights in relation to traditional knowledge belonging to individuals, families, clans, etc., and have developed traditional knowledge sharing protocols in response. They have also met resistance to sharing traditional knowledge, due to lack of trust between the knowledge holder and the organization or researcher requesting the information, by having Community staff organize meetings to address this issue and maintain regular communications with researchers interested in their community.

3.2.3.1   Data Licensing: Scenario 1

Government Mapping Agency X has a high quality dataset for which it wants to achieve as wide a distribution and use as possible. No restrictions on use are deemed necessary, aside from the normal requirement that data source be acknowledged. However, licensing such use is appropriate to discourage potential misuse of the data since the agency will have no knowledge of or control over who the users are. Agency X decides to make the dataset available on its government's Open Data Website, which uses the same type of licensing model as the *Licensing Agreement A: No-cost Data Access with No Restrictions*, and to promote the use of the data through notices on its website and via social media.

3.2.3.2   Data Licensing: Scenario 2

Aboriginal Mapping Agency Z has a very similar objective to that of Agency X. The difference is that Agency Z is uncomfortable with providing a completely open use of its dataset because there may be undesirable consequences if their data is misused or redistributed. It wants to encourage the most widespread use possible within the population of its Community, but there are certain types of traditional knowledge included in the dataset that should not be accessible to others (e.g., fur trapping routes, locations of hunting camps, good fishing locations, burial grounds, etc.). Past experience has demonstrated that access to such information by people outside the Community can result in fish and wildlife depletions and vandalism. *Licensing Agreement C: No-cost Data Access with Restrictions* provides the ideal mechanism for Agency Z to open up its data to its target users, while minimizing undesirable consequences by including restrictive clauses in the agreement prohibiting data exchanges with, or data redistribution to, outside parties.

3.2.3.3   Data Licensing: Scenario 3

DigitalMap Canada is a geospatial data reseller that markets a range of high quality digital map products to its customers, including to a niche market it has carved out in the retail and financial services sectors. Users integrate the geospatial data provided by DigitalMap with their own geospatial data and other sources of data on demographics, customer buying patterns, traffic flows, etc. Use of DigitalMap's data is restricted to internal applications such as business location optimization, routing of delivery vehicles, and targeted marketing to consumers (i.e., location based services). One of DigitalMap's most important sources of data for its products is City X's high quality street network data, kept current to within one week. City X agrees to enter into an agreement with DigitalMap based on *Licensing Agreement B: Fee-Based Data Access with No Restrictions*, and DigitalMap is happy with this licensing arrangement since its revenue stream is heavily dependent upon City X's data. The agreement has no conditions, aside from acknowledging the city as the source of the street network data, so DigitalMap has full rights to incorporate the data into its products and distribute it to others.

3.3.4 Data Service Level Agreements

Service level agreements (SLAs) are required to provide assurance to data users that the data provision service to which they are subscribing will meet their requirements. The *Service Level Agreement A: Data Access through Web Services* model addresses this need and applies specifically to the commitments being made by a provider of geospatial data via web services. The intent for this agreement is to clearly spell out what the web services user can expect from the data provider in terms of the data that is accessible under specific conditions, and the service guarantees.

3.2.4.1 Data Service Level Agreement: Scenario 1

Government Mapping Agency Z has embraced the merits of participating in its jurisdiction's spatial data infrastructure (SDI) initiative and has adapted its data and metadata to meet SDI standards. As a consequence, it will now be providing users with access to its data via web services, through the Web Map Service and Web Feature Service specifications developed by the Open Geospatial Consortium. Agency Z recognizes that users will need to know that they can depend upon their services in order to commit to the operational use of Agency Z's data. The *Service Level Agreement A: Data Access through Web Services* model provides what they need. Agency Z uses this model to develop their data service level policy and to publish the terms under which users can be assured their geospatial data services will be provided.

Typical SDI-Specific Elements of SLAs (Baranski & al, 2010)

Functional Service Properties:

- Supported standard, operations, formats, and layers
- offered algorithms

Non-Functional Service Properties

- *Runtime Related Properties* – performance, availability, capacity, scalability, reliability, flexibility, etc.
- *Data Related Properties* – covered area, accuracy, resolution, completeness, currency, level of detail, etc.
- *Security Related Properties* – authentication, authorization, confidentiality, accountability, auditability, encryption, etc.
- *Infrastructure Related Properties* – computation capacity and available storage
- *Business Related Properties* – usage costs
- *Transaction Related Properties* – integrity, consistency, isolation and durability of message exchange

4. Conclusions

This primer provides information intended to inform on and facilitate geospatial data sharing arrangements. It introduces the idea of data sharing within the context of the growing open data movement, which focuses on removing barriers such as restrictions on data use and dissemination, and data charges.

The primer refers to a number of example agreement types for sharing geospatial data and for guaranteeing levels of service under different circumstances. A number of tools are provided, including a decision tree, guidance on the purpose and conditions of use for each agreement types, and descriptions of typical use scenarios.

This primer : How to Share Geospatial Data is designed to be a starting point for data sharing discussions and negotiations within organizations that provide of geospatial data, as well as those who access and use it. To enhance applicability across a broad spectrum of circumstances, this primer uses general terms that have been drawn from research of best practices in data sharing agreements in Canada and abroad.

Appendix 1: Glossary

Acronym	Term	Definition
	Airborne imagery	Digital data of the earth collected by a variety of sensors (e.g., digital camera, multispectral scanners, LiDAR, etc.) mounted on a variety of platforms (e.g., fixed wing aircraft, helicopters, balloons, etc.).
	Anonymized data	A data set that has been irreversibly severed from the identity of the data contributor to prevent any future re-identification (may also include preserving identifying information which could only be re-linked by a trusted party in certain situations).
CGDI	Canadian Geospatial Data Infrastructure	The Canadian Geospatial Data Infrastructure (CGDI) helps Canadians gain new perspectives into social, economic, and environmental issues, by providing an online network of resources that improves the sharing, use and integration of information tied to geographic locations in Canada. More specifically, the CGDI is the convergence of policies, standards, technologies, and framework data necessary to harmonize all of Canada's location-based information. Consequently, the CGDI reduces barriers to using geospatial information so that Canadians can discover, access, visualize, integrate, apply and share quality location-based information and make effective decisions.
	Decision tree	A decision support tool that uses a tree-like graph or model of decisions to help choose an appropriate actions, tool, etc.
	Framework data	Framework data, the core of the CGDI, is the common, up-to-date, and maintained base of quality geospatial data for all of Canada, which provides context and reference to physical features and other types of information linked to geography. These datasets are the base mapping layers required to develop applications, and are freely available for reuse. Framework data is the foundation upon which location-based information becomes spatially relevant to users.
	GeoConnections	The GeoConnections program is a national initiative led by Natural Resources Canada that supports the integration and use of the Canadian Geospatial Data Infrastructure (CGDI).
	Interoperability	A property of a product or system, whose interfaces are completely understood, to work with other products or systems, present or future, without any restricted access or

Acronym	Term	Definition
		implementation.
	Licensing	Authorizing by the licensor the use of the licensed material by the licensee
	Metadata	Information about data. Metadata describes how and when and by whom a particular set of data was collected, and how the data are formatted. Metadata is essential for understanding information stored in data warehouses.
	Open data	The idea that certain data should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control.
OGC	Open Geospatial Consortium	An international industry consortium of companies, government agencies and universities participating in a consensus process to develop publicly available interface standards, which empower technology developers to make complex spatial information and services accessible and useful with all kinds of applications.
	Operational policies	A broad range of practical instruments such as guidelines, directives, procedures and manuals that address topics related to the lifecycle of geospatial data (i.e. collection, management, dissemination, use) and help facilitate access to and use of geospatial information.
	Satellite imagery	Digital data of the earth collected by a variety of types of sensors (e.g., optical, radar, etc.) mounted on satellite platforms.
	Traditional knowledge	Sometimes also called indigenous knowledge or traditional environmental knowledge, generally refers to the long-standing traditions and practices of certain indigenous communities; encompasses the wisdom, knowledge, and teachings of these communities that in many cases has been orally passed from person to person for generations .
	Web services	Self-contained, self-describing, modular applications that can be published, located, and invoked across the Web. Web services perform functions that can be anything from simple requests to complicated business processes. Once a Web service is deployed, other applications (and other Web services) can discover and invoke the deployed service.
WFS	Web Feature Service	An Internet-based service that allows clients to conduct data manipulation on geographic features, allowing for querying, retrieval and transactional (i.e., add, update or delete) operations.

Acronym	Term	Definition
		The WFS conforms to the OGC Web Feature Server Interface specification.
WMS	Web Map Service	An Internet-based service that allows clients to display maps and/or images with a geographic component and whose raw spatial data files reside on one or more remote WMS servers. The WMS conforms to the OGC Web Map Server Interface specification.
	Web wrap licenses	License agreements in software or data that is downloaded or used over the internet

Appendix 2: Agreement Type Summary

Type	Name	Typical Content and Characteristics
Data Sharing Agreements		
1.1	Data Sharing Agreement A: No Restrictions	These types of agreements includes information about datasets to be shared, ownership rights, permitted uses, lack of warranty and guarantees by provider, parties responsibility and liability for costs related to negligence, non-exclusivity, dispute resolution, non-binding obligations to third parties, and termination.
1.2	Data Sharing Agreement B: With Restrictions	▪ restrictions on use
1.3	Data Exchange Agreement A: No Restrictions	
1.4	Data Exchange Agreement B: With Restrictions	▪ restrictions on use
Licensing Agreements		
2.1	Licensing Agreement A: No-cost Data Access with No Restrictions	This type of licensing agreement includes information about: use of information under the licence, permissions granted under the licence, exemptions, warranty and guarantees of provider, governing law which applies to the jurisdiction covered by the licence, and definitions.
2.2	Licensing Agreement B: Fee-Based Data Access with No Restrictions	This type of licensing agreement includes information about: description of datasets to be licensed, permissions granted under the licence, warranty and guarantees of provider, fees, royalties and reporting, and effective term covered by the agreement.
2.3	Licensing Agreement C: No-cost Data Access with Restrictions	This type of licensing agreement includes information about: description of datasets to be licensed, permissions granted under the licence, restrictions on use, warranty and guarantees of provider, and effective term covered by the agreement.
2.4	Licensing Agreement D: Fee-Based Data Access with Restrictions	This type of licensing agreement includes information about: description of datasets to be licensed, permissions granted under the licence, restrictions on use, warranty and guarantees of provider, information about fees, royalties and reporting, and effective term covered by the agreement.
Service Level Agreement		
3.1	Service Level Agreement A: Data Access through Web Services	This type of agreement includes information about service terms, description of available datasets, service environment, service availability, limitations, warranty, customer responsibilities and termination.

Appendix 3: References

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Austalian National Statistical Service. (2009, November). *A Good Practice Guide to Sharing your Data with Others*. Retrieved August 14, 2011, from National Statistical Service: http://www.nss.gov.au/nss/home.nsf/0/e6c05ae57c80d737ca25761d002fd676/$FILE/A%20Good%20Practice%20Guide%20to%20Sharing%20Your%20Data%20with%20Others_November%202009_1.pdf

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http://www.earthobservations.org/documents/geo_vi/07_Implementation%20Guidelines%20for%20the%20GEOSS%20Data%20Sharing%20Principles%20Rev2.pdf

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GeoConnections & AMEC. (2010). *Best Practices for Sharing Sensitive Environmental Geospatial Data.* Retrieved July 25, 2011, from GeoConnections: http://GeoConnections.NRCan.gc.ca

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ICIS. (2010, August). *Data Agreement.* Retrieved September 23, 2011, from Integrated Cadastral Information Society: http://www.icisociety.ca/icis-online-library/documents/DataSharingandLicensingAgreement_Blank.pdf

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The Barrington Consulting Group. (2010b, April 8). *GeoNOVA Service Level Agreement Template Version 3 – Final.* Retrieved September 12, 2011, from GeoNOVA: http://www.gov.ns.ca/geonova/pdf/geonova_sla_template.pdf

The National Archives (UK). (2011, July). *UK Government Licensing Framework for Public Sector Information: Edition 2.0.* Retrieved September 12, 2011, from The National Archives (UK): http://www.nationalarchives.gov.uk/documents/information-management/uk-government-licensing-framework.pdf

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Appendix 4: Example Data Sharing Guides and Agreements

Data Sharing Guidelines

Best Practices for Sharing Sensitive Environmental Geospatial Data
http://GeoConnections.NRCan.gc.ca

Building a GIS Community by Sharing Data
http://www.urisa.org/files/publications/data_sharing/data_sharing.pdf

Data Access and Management Protocol
http://geoinfo.uneca.org/sdiafrica/Reference/Ref5/ANZLIC%20data%20access.pdf

The Dissemination of Government Geographic Data in Canada - Guide to Best Practices Version 2 http://GeoConnections.NRCan.gc.ca

A Good Practice Guide to Sharing your Data with Others
http://www.nss.gov.au/nss/home.nsf/NSS/E6C05AE57C80D737CA25761D002FD676?opendocument

Good practice in data and service sharing
http://inspire.jrc.ec.europa.eu/documents/Data_and_Service_Sharing/GoodPractice_%20DataService%20Sharing_v1.1.pdf

Guidance on Preparing Information Sharing Agreements Involving Personal Information
http://www.tbs-sct.gc.ca/atip-aiprp/isa-eer/isa-eer06-eng.asp

Lessons from Practice: A Guidebook to Organizing and Sustaining Geodata Collaboratives
http://printfu.org/read/lessons-from-practice-a-guidebook-to-organizing-and--9d21.html?f=1qeYpurpn6Wih-SUpOGum6unh7jU6djj1tiQ2Nvd4YbF38bP49_I2aKFsZKw493K2s_U29qW2eOItOLZytzd4N7bzIzQ5MmUlpOelKThrpivj9ngkbHYrpmWqpTT4-fa4t21vNTiypaj2Kqjo5DaiLDgn6KgsIfc3NngrJid693sm9LR4-jU29HYnuHb1aPK5NDa2dTk2eeXxuLm0tHgy-ic0dHi6dTi28TV4N3X5suj3cnSkbHi

Natural Resources Canada Critical Infrastructure Information Identification Project Report Version 4.3
http://GeoConnections.NRCan.gc.ca

National Geospatial Advisory Committee Interagency Data Sharing – A Primer
http://www.fgdc.gov/ngac/ngac-interagency-data-sharing-primer-june-2011.pdf

Open Government License Guidance for Information Providers
http://www.nationalarchives.gov.uk/documents/information-management/ogl-information-provider-guidance.pdf

UK Location Data Sharing Operational Guidance Part 2 - Licensing and Charging
http://location.defra.gov.uk/wp-content/uploads/2010/04/Data-Sharing-Operational-Guidance-Part-2-v1-0.pdf

Data Sharing Agreements

Carrier Sekani Tribal Council Traditional Knowledge Data Agreement
http://fnbc.info/content/traditional-knowledge-data-agreement-carrier-sekani-tribal-council

County of Lanark Data Sharing Agreement
http://www.county.lanark.on.ca/AssetFactory.aspx?did=1973 (Pages 65-72)

Environmental Data Sharing Agreement
http://www.env.gov.bc.ca/epd/bcairquality/reports/pdfs/ec_wlapagreement.pdf

GeoNOVA Exchange Agreement Template
http://www.gov.ns.ca/GeoNova/pdf/GeoNOVA_Exchange_Agreement_Template.pdf

ICIS Appropriate Data Use Agreement http://www.icisociety.ca/icis-online-library/documents/AppropriateuseagreementforICISdata_20100811.pdf

International Council for Science (ICSU) World Data System (WDS) Template Agreement
http://icsu-wds.org/images/files/Template_ICSU_WDS_Agreement_with_annexes.pdf

IPC Ontario Model Data Sharing Agreement http://www.ipc.on.ca/images/Resources/model-data-ag.pdf

NYS Geographic Information System (GIS) Cooperative Data Sharing Agreement for Use with Local Governments of New York State (NYS) and Not-for-profit Entities
http://www.fgdc.gov/grants/2006CAP/relateddocs/NY_Profile.pdf

Memorandum of Agreement between Johnston County, NC and State of North Carolina Centre for Geographic Information and Analysis (CGIA)
http://geoinfo.uneca.org/sdiafrica/Reference/Ref5/NC%20data%20sharing%20agreement.pdf

Somerset County, New Jersey Digital Data Sharing Agreement
http://www.opendataconsortium.org/documents/SomersetCo_NJ_DSA_Form.pdf

State of Oregon 9-1-1 GIS Data Sharing Agreement
http://www.oregon.gov/OMD/OEM/OR911/MSAG_GIS/SAMPLE_gis_data_sharing_agreement.pdf?ga=t

Unrestricted Use Memorandum of Agreement for the Exchange of Scientific Data and *End-Use Memorandum of Agreement for the Exchange of Scientific Data*
http://GeoConnections.NRCan.gc.ca

Licensing Agreements

ECOMET Licensing Agreement between NMS and Service Provider
http://www.ecomet.eu/images/ecomet/documents/agreement%20service%20provider.pdf

ICIS Data Agreement http://www.icisociety.ca/icis-online-library/documents/DataSharingandLicensingAgreement_Blank.pdf

No-Fee Unrestricted Use Web Wrap License, Fee-Based Unrestricted Use License, No-Fee End-Use Restricted License, Fee-Based End-Use Restricted License, Reseller, and *Value-Added Reseller Agreements*
http://www.geoconnections.org/publications/Best_practices_guide/Guide_to_Best_Practices_Summer_2008_Final_EN.pdf

Ontario Geospatial Data Exchange (OGDE) Data License Agreement
http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@lio/documents/document/stdprod_067330.pdf

Open Government License for Public Sector Information
http://www.nationalarchives.gov.uk/doc/open-government-license/open-government-license.htm

Open Government License for Government of BC Information
http://www.data.gov.bc.ca/dbc/admin/terms.page

Statistics Canada Unrestricted Use License Agreement
http://geodepot.statcan.gc.ca/2006/04012001161815042103201g/0415231412150104_05-eng.jsp?geo=011&Submit=License+Agreement&Agreed=0&year=r10&language=E&format=A&fileName

Service Level Agreements

City of Fresno, California GIS Service Level Agreement
http://www.fresno.gov/NR/rdonlyres/485C48C9-1E25-4736-B21D-4C8DFBA12419/0/ISDGISSLAFY09.pdf

ESA Layers Service Level Agreement
http://services.eoportal.org/massRef/documentation/ESA_Layers_SLA_090217.pdf

GeoNOVA Service Level Agreement Template
http://www.gov.ns.ca/geonova/pdf/geonova_sla_template.pdf

geoplan® *Service Level Agreement* http://www.geoplan.com/pdfs/service_level_agree.pdf

Service Level Agreement for the Provision of Service between Joint Information Systems Committee (acting on behalf of the Funding Bodies) and the University of Edinburgh acting through EDINA http://www.jiscmu.ac.uk/services/slas (EDINA SLA : 1st August 2010 - 31st July 2011)

Virginia Polytechnic Institute and State University *Agreement to Provide Enterprise GIS Services*
http://www.gis.it.vt.edu/forms/